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10/577,387	04/26/2006	Kenji Watari	7412/88137	4696

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EXAMINER
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MELLON, DAVID C

ART UNIT	PAPER NUMBER
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1797

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 2/2/2010 and 2/18/2010 has been entered.

### ***Information Disclosure Statement***

2. The information disclosure statement filed 2/18/2010 fails to comply with 37 CFR 1.98(a)(1), which requires the following: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement. The information disclosure statement has been placed in the application file, but the information referred to therein has not been considered.

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3. With regards to the submitted copies of PTO 1449 and PTO 892 forms from related cases, if Applicant desires them to be noted on the published patent document at time of allowance, Applicant should list them on a submitted PTO-1449.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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**7. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidenori et al. (JP 2001-205054) see English language machine translation submitted by Applicant and further in view of Watari et al. (US 2002/0148775).**

Regarding claim 1, Hidenori et al. discloses in figures 1-3, a hollow fiber membrane module (Abstract) comprising:

- A sheet form hollow fiber membrane (5, see also [0006])
- An anchoring member (7) wherein:
  - An end of a side of a hollow fiber membrane opening of the sheet form hollow fiber membrane is fastened by the anchoring member (7) so that the sheets are substantially parallel leaving the end open (see figures 1-3, note in figure 3 element 3)
  - A first side and an opposing second side of the anchoring member (in figure 3 see for instance top of 7 and round pipe 6 attached to bottom side of 7)
  - Wherein the first side is substantially rectangular (7)
  - Wherein the second side is substantially circular with the membrane ends opening into it (6 - see in figure 3 membrane ends open into circular pipe region 6).

Hidenori et al. fails to explicitly disclose a non-porous structure of the membrane with a 3 layer composite hollow fiber membrane.

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Watari et al. discloses a gas-permeable hollow fiber membrane (abstract) which has a three-layer structure with a central non-porous layer with porous layers disposed on either side ([0009]).

Hidenori et al. and Watari et al. are combinable because they are concerned with the same field of endeavor, namely that of hollow fiber membrane systems.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the hollow fiber membrane of Hidenori et al. with a sheet formed membrane of the three layer construction with a non-porous layer as taught by Watari et al. for the purpose of enabling improved gas separation and allowing the membrane unit to be useable for degassing inks ([0007] of Watari).

Regarding claim 2, Hidenori et al. further discloses the parallelepiped structural feature (see figures 2 and 3). Further note that the specific structures as claimed lend towards broad and numerous interpretations. Note the claim requires no specific alignment of the circular/cylindrical portion with respect to radial dimension/axial dimension and how it is facing/affixed to the parallelepiped region.

Regarding claims 3-5, modified Hidenori et al. discloses all of the claim limitations as set forth above.

While Hidenori et al. does not explicitly disclose the relationship between the diameter of the cylindrical section and the length of the cylindrical section, it would have been obvious to one having ordinary skill in the art at the time of the invention to have optimized the length to diameter ratio to achieve the claimed lengths, diameters, and ratios since the disclosed structure of Hidenori sets forth a ratio exists. It would have

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been obvious to have done to configure the apparatus for end installation and use and to maximize fluid dynamics to achieve the best separation possible. Additionally, applicant has not established any criticality of the claimed lengths, diameters, and ratios. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art (e.g. the readily apparent proportionality in figure 2), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Additionally, absent some showing of secondary evidence, the relative dimensional ratios of the cylindrical section are not patentably distinct from the prior art teachings of Yamamori et al. because; [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems Inc.*, 220 USPQ 777 (1984).

Regarding claims 6-7, modified Hidenori et al. discloses all of the claim limitations as set forth above.

Hidenori et al. does not explicitly disclose a relationship between the length of a long side of the rectangular parallelepiped section and the cylindrical section diameter.

While Hidenori et al. does not explicitly disclose the relationship between the diameter of the cylindrical section and the length of the long face of the parallelepiped section, it would have been obvious to one having ordinary skill in the art at the time of the invention to have optimized the length to diameter ratio to achieve the claimed lengths, diameters, and ratios since the disclosed structure of Hidenori sets forth a ratio

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exists. It would have been obvious to have done to configure the apparatus for end installation and use and to maximize fluid dynamics to achieve the best separation possible. Additionally, applicant has not established any criticality of the claimed lengths, diameters, and ratios. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art (e.g. the readily apparent proportionality in figure 2), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Additionally, absent some showing of secondary evidence, the relative dimensional ratios of the cylindrical section are not patentably distinct from the prior art teachings of Hidenori et al. because; [W]here the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device, *Gardner v. TEC Systems Inc.*, 220 USPQ 777 (1984).

Regarding claims 8-12 and 14-15, modified Hidenori et al. discloses all of the claim limitations as set forth above.

Watari et al. further discloses the three layer membrane has porous layers sandwiching a non-porous layer ([0009]) wherein the non-porous layer is gas permeable ([0026]) and the porous layers are made of polyolefins ([0023]). Watari et al. further discloses porous layer thickness of 5-100micrometers and non-porous layer thickness of 0.3-2micrometers ([0009]) with an inner membrane diameter of 50-500 micrometers



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with a membrane thickness of 10-150 micrometers resulting in a ratio of the two of more than 0.1 ([0010]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the membrane system of Hidenori et al. such that it includes all the features of the three layer composite membrane of Watari et al. for the purpose of decreasing the cost of the system by reducing the mechanical strength needed in the system (Watari et al, [0004]).

Regarding the gas permeability of the non-porous layer, Watari et al. discloses the use of high gas permeability membrane materials ([0026]) but is silent as to the specific gas permeability range of the non-porous layer.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the non-porous layer to have a gas permeability in the claimed range for the purpose of improving ink degassing. Furthermore, applicant has not established the criticality of the gas permeability amount and the instant application uses the same materials as the prior art. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art (e.g. the high permeability material), discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 13, modified Hidenori et al. as modified by Watari et al. further discloses an outer diameter of 100 to 3000 micrometers (two porous layers of 100 micrometers combined with a 3 micrometer non porous layer and 50-500 micrometer

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inner diameter results in a total membrane diameter in the order of 100-3000 micrometers).

### ***Response to Arguments***

8. It is noted by the Examiner that at this time Applicant has presented no specific arguments towards the patentability of the claims over the newly submitted prior art references in the two IDS documents filed 2/2/2010 and 2/18/2010.

9. The Examiner suggests clarification of claim language so as to provide features not present in Hidenori. For example, consider further defining the geometric relationship of the cylindrical portion with respect to the parallelepiped portion.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID C. MELLON whose telephone number is (571)270-7074. The examiner can normally be reached on Monday through Thursday 9:00am-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tony G Soohoo/  
Primary Examiner, Art Unit 1797

/D. C. M./  
Examiner, Art Unit 1797